

Coal Can Not Fill World's Burning Appetite

With Supplies Short, Price Rise Surpasses Oil and U.S. Exporters Profit

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Long considered an abundant, reliable and relatively cheap source of energy, coal is suddenly in short supply and high demand worldwide.

An untimely confluence of bad weather, flawed energy policies, low stockpiles and voracious growth in [Asia](#)'s appetite has driven international spot prices of coal up by 50 percent or more in the past five months, surpassing the escalation in oil prices.

The signs of a coal crisis have been showing up from mine mouths to factory gates and living rooms: As many as 45 ships were stacked up in Australian ports waiting for coal deliveries slowed by torrential rains. [China](#) and [Vietnam](#), which have thrived by sending goods abroad, abruptly banned coal exports, while [India](#)'s import demands are up. Factory hours have been shortened in parts of China, and blackouts have rippled across [South Africa](#) and [Indonesia](#)'s most populous island, Java.

Meanwhile mining companies are enjoying a windfall. Freight cars in Appalachia are brimming with coal for export, and old coal mines in [Japan](#) have been reopened or expanded. European and Japanese coal buyers, worried about future supplies, have begun locking in long-term contracts at high prices, and world steel and concrete prices have risen already, fueling inflation.

In the United States, the boom in coal exports and prices has helped lower the trade deficit, which declined last year for the first time since 2001. The value of coal exports, which account for 2.5 percent of all U.S. exports, grew by 19 percent last year, to \$4.1 billion, the National Mining Association said. An even bigger increase is expected this year.

That means that, in a small way, higher revenues for U.S. coal exports indirectly helped the U.S. economy cover the cost of [iPods](#) from China, flat-screen TVs from Japan and machinery from [Germany](#). The still-gaping trade deficit of the world's largest industrial power at the dawn of the 21st century was slightly eased by a fuel from the era and pages of [Charles Dickens](#).

Big swings in the prices of coal and other commodities are common. But while the price of coal has slipped slightly in recent weeks, many analysts and companies are wondering whether high prices are here to stay. As increasing numbers of the world's poor join the middle classes, hooking up to electricity grids and buying up more manufactured goods, demand for coal grows. World consumption of coal has grown 30 percent in the past six years, twice as much as any other energy source. About two-thirds of the fuel supplies

electricity plants, and just under a third heads to industrial users, mostly steel and concrete makers.

Meeting rising demand will prove difficult. To maintain its role as the world's producer of last resort, the United States will need to make major investments in mines, railways and ports.

"We think the current world markets have legs," said Thomas F. Hoffman, senior vice president of external affairs at Consol Energy, one of the biggest U.S. coal producers. Consol is trying to decide whether to expand output at its Appalachian mines and to add capacity in [Baltimore](#)'s harbor.

"We're at a point where we're running through the capacity," said David Khani, a coal analyst at Friedman, Billings, Ramsey Group. He compares the coal market to the oil market. For coal, he added, "it is unprecedented."

If high prices last, that would raise the cost of U.S. electricity, half of which is generated by coal-fired powered plants.

Expensive or not, coal is almost always dirtier to burn than are other fossil fuels. Although its use accounts for a quarter of world energy consumption, it generates 39 percent of energy-related carbon dioxide emissions. Climate change concerns could lead to legislation in many countries imposing higher costs on those who burn coal, forcing utilities and factories to become more efficient and curtail its use. Climatologists warn that without technology to capture and store carbon dioxide emissions, burning more coal would be disastrous.

China's Ravenous Appetite

China, the world's largest consumer of coal, is burning through more than the United States, [European Union](#) and Japan combined. And its consumption is increasing by about 10 percent a year. In 2006, it installed power plants with more capacity than all of [Britain](#).

China has vast coal resources, but its growing appetite has outstripped production. In January 2007, it imported more coal than it exported for the first time, according to government figures.

Logistics compound China's coal woes. The biggest deposits lie inland and in the north while most of the fast-growing industries are in the south and along the coasts. Transporting all that coal strains the railways, half of which are devoted to coal transport.

When blizzards hit this winter, shipments were held up, reserves dwindled to half their normal levels, and the government suspended exports for two months. On Friday, it issued its first export license of 2008. Because of shortages, electricity was rationed in 17 provinces, most of them in the south.

Guangdong Taini Cement said it was not allowed to use electricity from 7 a.m. to noon or from 5 p.m. to midnight. "The electricity we were getting at that time was only 60 percent of what we usually get," said Chen Jijing, director of the company's manufacturing department.

Even before the storms, blackouts were common, as a result of China's muddled energy policies.

China has done little to contain demand. Indeed, the government has limited electricity rate increases for years, encouraging greater use. Concerned about climbing inflation, [Beijing](#) on Jan. 10 turned once again to Communist-style measures, freezing electricity prices even as coal and oil prices soared.

"The current price policy encourages people and companies to consume electricity because electricity is so cheap. There's no pressure for them to use energy resources efficiently," said Ping Xinqiao, a professor of economics at Beijing University.

Strong coal demand has created incentives for small illegal coal mine operations that are extremely dangerous and highly polluting. The government has shut down 11,155 such mines since 2005, further crimping supplies.

In India, Policy vs. Demand

India also relies on outdated energy policies while trying to keep pace with booming demand. The economy is growing at 8 to 9 percent a year, and by 2012 India expects to add 76,000 megawatts of power, according to Upendra Kumar, a member of the mining committee at the Confederation of Indian Industries.

But 94 percent of India's coal mining is in the hands of government-owned companies. The biggest, Coal India, produces four-fifths of the country's coal. Because the government is worried about social unrest, the prices for coal and electricity are kept low.

"Today our coal prices are about 40 percent lower than international coal prices," said K. Ranganath, Coal India's director of marketing. And, he notes, the "lower the prices, the higher the demand."

That discourages investment, too. Although India's coal reserves are vast, they haven't been fully developed. The government hopes to boost coal production by 50 percent by 2012 and quadruple it by 2030. Yet that would require massive investment. Experts note that India's coal deposits are deep and difficult to mine. The dilapidated rail infrastructure is another obstacle; India's coal has to travel an average of 435 miles to reach plant and industrial users, said D.P. Seth, additional secretary in India's coal ministry.

As a result, India expects to import 51 million tons by 2012, nearly as much as U.S. exports last year. By 2022, imports could climb to 136 million tons, Kumar said.

Developing countries aren't the only ones using more coal. Throughout the 1980s and 1990s, British coal consumption declined as new sources of oil and natural gas were discovered in the [North Sea](#). However, the trend has reversed and coal consumption has climbed steadily over the past six years, including a 9 percent jump from 2005 to 2006. Coal has now surpassed gas once again as the leading fuel for electricity plants.

However, the British mines that [George Orwell](#) described 70 years ago as "like my own mental picture of hell" are much smaller than they once were. Mine production capacity declined during the '80s and '90s "dash for gas." Now Britain imports coal from [Russia](#), [Australia](#), [Colombia](#), South Africa and Indonesia.

At the Mercy of Nature

Sometimes it takes an act of nature to uncover human and policy flaws. The fragile balance of coal supplies in Asia has been exposed this winter to flash floods and torrential rains in Asia's top coal-producing nation, Australia. The floods caused six big coal producers in [Queensland](#) to declare "force majeure," a contractual option that allows them to miss coal deliveries because of events outside their control. The companies include [Rio Tinto](#), [BHP Billiton](#) and [Xstrata](#).

At two major coal ports in Australia, about 45 ships are stacked up, waiting for deliveries from the mines. Loading delays running between 20 and 28 days. The industry is expected to take months to recover. Workers are still draining water and mud that pooled in open pits and repairing machinery and roads.

Australia's problems have contributed to a surge in Asian spot prices, meaning prices for immediate delivery, for coking coal, used for iron and steel production. They are running at three times the current contract price of \$98.

South Africa, which might ordinarily have come to Asia's rescue, was wrestling with its own supply problems. The state-owned utility, [Eskom](#), let coal reserves dwindle, and power plants simply ran out. Power outages crippled the country. Heavy rain also dampened coal piles, making it harder to burn the tiny reserves efficiently.

Rolling power outages forced the mining industry to shut down for several days. Amid this political debacle, Eskom vowed to replenish its coal stockpiles, a push that will eat into supplies available for export.

Australia's gridlock also coincides with deep cuts in coal exports by Vietnam, a key supplier to Japan and China. Vietnam will raise tariffs on coal exports to slash them by about a third this year. The goal is to keep coal at home for domestic needs. Last year, Vietnam exported 32.5 million tons of its total production of 41.2 million tons.

Vietnam's Industry Ministry has reportedly recommended to the country's prime minister a total halt in coal exports after 2015.

Prices Squeezing Asia

The consequences of tight supplies are being felt throughout the region and are not limited to developing countries.

Rising coal prices are squeezing Japan and [South Korea](#), which depend largely on imports for energy. Hardest hit, so far, are steel companies. It takes about 1.5 tons of coking coal to make a ton of steel. Steel makers, in turn, are raising prices for carmakers and other manufacturers, who at some point will pass some of the costs on to customers.

Japan's [Nippon Steel](#) and JFE Holdings, and South Korea's Posco agreed last month to a 65 percent increase in coal prices, paying Brazilian mining giant Vale \$78.90 a ton, up from \$47.81. It was the industry's first major deal of the year and could set a global benchmark for material to make steel; a day after the deal was announced, Japanese Industry Minister Akira Amari announced that he was worried about the country's growth.

Japanese steel makers were also buying on the spot market last month, purchasing U.S. coking coal for the first time since 2005, according to Nihon Keizai Shimbun, a Japanese business paper. It reported that mills were paying about \$350 a ton for U.S. coal, which is about three times the price of coal purchased from Australia last year.

Nippon Steel has said it plans to raise prices for steel sheet and plate by 10 to 20 percent, reflecting the higher costs of iron ore and coal. Shipbuilders have been passing higher steel costs on to their customers. And in the construction machinery industry, Shin Caterpillar [Mitsubishi](#) and Kobelco Construction Machinery raised prices across the board in January, citing higher materials costs.

Jackpot for Mining Firms

For coal mining companies, the coal crisis is a bonanza.

The price hike has revived long-neglected mines in [Hokkaido](#), a region in northern Japan that has been producing coal for more than a century. As global coal prices have more than doubled, the Japanese mines have suddenly become competitive and they are attracting the attention of utilities and companies that use coal for power.

Hokkaido Electric Power Company this year doubled its coal order from the Hokkaido mines, from 500,000 to 1 million tons. The mines cannot produce enough coal to meet new requests.

In the United States, it is getting harder to license and borrow money to build new coal plants. But [Peabody Energy](#)'s chief executive Gregory H. Boyce says foreign demand will sustain mining output. "Coal is the sustainable fuel best able to close the gap of growing demand vs. scarce and expensive alternatives," he said at a conference last month.

Khani, the FBR analyst, said that "coal use has expanded beyond steam and steel into coal-to-liquids in China and coal-to-chemicals," which he said would link coal prices to oil as well as natural gas. Given recent oil price levels, that could mean higher prices for coal too.

That could slow U.S. and worldwide economic growth and contribute to a renewed bout of stagflation. Rising commodity prices are "producing real limits on the future of economic growth in the U.K. and overseas," said Shaun Chamberlin, a specialist in energy and climate change at the Lean Economy Connection, an research institute in [London](#). "In terms of industry, we're running out of ways of generating energy. We've jumped around from one energy source to another, and now we're running out."

All this is especially bad news for those worried about climate change. Germany, for example, is caught between its pledge to eliminate nuclear power and its pledge to slash carbon emissions. Because nuclear energy accounts for a quarter of the country's electricity needs, utilities have filed applications for permits to build two dozen coal-fired plants over the next few years.

"You reach a point where people say you have to stop burning coal," said Per Nicolai Martens, director of the Institute of Mining Engineering at the Aachen Technical University in Germany. "But when you reach that point, you are forced to ask the question of what happens when you shut it off?"

In the developing world, where growth is paramount, there is no thought of shutting off coal, especially when, on average, a person in China emits about one-sixth and an Indian less than one-tenth as many greenhouse gases as an American "Coal will continue to be king in India. There is no way out," said Kumar, of the Confederation of Indian Industries. "The other choice is asking the country to stay poor. . . . The question is, are we going to allow poverty or allow a little bit of pollution?"

Harden reported from Tokyo. Correspondents Ariana Eunjung Cha in Shanghai, Craig Timberg in Johannesburg, Shannon Smiley in Berlin, Jill Colvin in London and Rama Lakshmi in New Delhi contributed to this report.